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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/781,804
Filing Date: February 20, 2004
Appellant(s): EKLUND ET AL.

Peter Rashid,
Reg. No. 39,464
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 07 December 2010 and 16 December 2010 appealing from the Office action mailed 09 August 2010.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 1, 2, 6, 7, 11-13, 16-20 and 22-24.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN

REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

7,155,423	**Josephson et al**	**Dec. 26,2006**
7,206,760	**Carey et al**	**Apr. 17, 2007**

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1, 2, 6, 7, 11 –13, 16 – 20, 22 - 24 rejected under 35 U.S.C. 103(a) as being unpatentable over **Josephson et al** (US Patent No. 7155423) in view of **Carey et al** (US Patent No. 7,206,760).

Regarding **claims 1 and 19, Josephson** teaches:

- a) generating a first set of solutions (of portfolio allocations) in a portfolio configuration space using the computing device, the portfolio configuration space having a plurality of dimensions;
- (b) generating a second set of solutions (in a portfolio performance space) using the computing device, the (portfolio performance) space having at least three dimensions; each solution in the first set of solutions matching with a corresponding solution in the second set of solutions;

Josephson uses a strategy of **dominance filtering** as applied to hybrid electric vehicle design (HEV), a domain of architecture of his invention [column 4 lines 51-67].

Design candidates are screened using four criteria [column 1 lines 54-60]. In particular, he uses trade-offs between city and highway efficiencies in miles per gallon [column 5 lines 18-33], and acceleration capacity [column 5 lines 34-48]. Examiner interprets these categories (efficiencies and acceleration capacity) as analogous to Applicant's **set of solutions**. **Josephson** uses a computing device in his strategy [see at least column 2 lines 41-52, column 7 lines 29-39].

Josephson discloses a user **discarding** candidates which have worse performance than say acceleration of vehicle to 60 MPH in more than 12 seconds [see at least column 5 line 49 - column 6 line 9, and column 6 line 47- 53]. Examiner interprets this selection of "candidates for discarding" as analogous to Applicant's **removing the dominated solutions**.

Josephson does not explicitly apply his strategy of **dominance filtering** to portfolio allocations (of financial instruments). He also does not explicitly disclose:

- c) selecting a first dimension from the at least three dimensions of the portfolio performance space;
- d) generating bins for all remaining non-selected dimensions of the portfolio performance space
- e) determining a solution in each bin of the non-selected dimensions with maximum value along the selected dimension;
- (f) comparing the solution with the maximum value in each bin to other solutions in each bin to determine whether other solutions are dominant solutions or dominated solutions; and

- g) removing the dominated solutions from the portfolio performance space so as to generate a reduced set of solutions, the reduced set of solutions being used in investment decisions.

However, **Carey** teaches a strategy of defining an universe of securities for potential investment [column 1 lines 54-60] and uses statistical analysis to evaluate the price history of each [column 2 lines 4-18]. Stocks are sorted and stored according to magnitude of a stocks *one-year price appreciation* [column 2 line 55-63], magnitude of the company's *return-on-assets* [column 3 lines17- 30], and *price-to-cashflow ratio* [column 3 lines 30-44]. He further discloses sorting all stocks in descending order of *one-year price appreciation* and writing to File A, descending order of *six-month price appreciation* and writing to File B, descending order of *return-on-assets ratio* and writing to File C, and **ascending** order of *price-to-cash flow ratio* and writing to File D [Figure 1]. Examiner interprets these *Files A, B, C, and D* as analogous to Applicant's **bins of the portfolio performance space** whereas the parameters *one-year price appreciation, six-month price appreciation, return-on-assets ratio*, and *price-to-cash flow ratio* as analogous to Applicant's **dimensions** with a maximum value. Examiner notes that *maximum values* - extreme values - are inherent when sorting stocks in ascending or descending orders of magnitude.

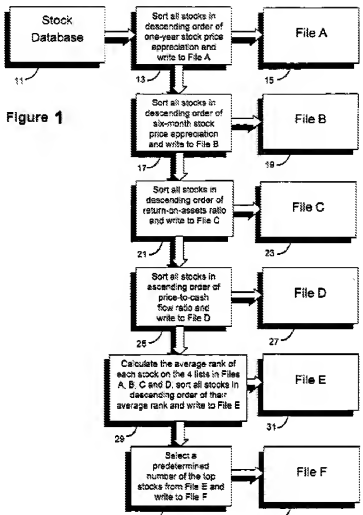

Figure 1

Carey then sorts and organizes stocks according to the magnitude of each company's average ranking in each of these categories. He discloses:

> After File D has been completed, the step indicated by diagram block 29 is performed in which the stocks are sorted, or organized, according to the magnitude of the company's average rank on the four lists in Files A, B, C, and D. (For example, a stock that happened to be ranked first in Files A and B, i.e., happened to have the greatest one-year and six-month PAVs, and was ranked second in Files C and D, i.e., had the second highest return-on-assets ratio and the second lowest

price-to-cashflow ratio, would have an average rank of (1+1+2+2)/4 or 1.5.) The sorting may be done by organizing the stocks in descending order of their average rank. (A stock with an average rank of 1.5 would be listed ahead of a stock with an average rank of 2.0, etc.) The sorted stock names are written to File E, as shown in diagram block 31 [column 3 lines 45-59].

Examiner notes that *sorted stocks which are written to File E* as analogous to Applicant's **set of solutions**. Examiner notes that herein **Carey** discloses *comparing ranks of stocks among files A, B, C, and D* as analogous to Applicant's limitation:

- (f) comparing the solution with the maximum value in each bin to other solutions in each bin to determine whether other solutions are dominant solutions or dominated solutions.

Carey further discloses in claim 1:

A computer-implemented method for selecting securities from a group of available securities for an investment portfolio, comprising:

- said computer performing the steps of calculating price appreciation for each of said available securities;
- calculating a return on assets ratio for each of said available securities;
- calculating a price to cashflow ratio for each of said available securities;
- ranking at least some of the available securities to form a group of ranked securities, said ranking comprising ranking according to said price appreciation to assign each of said available securities one or more separate price appreciation ranks, ranking according to said return on assets ratio to assign each of said available securities a separate return on assets ratio rank, ranking according to said price to cashflow ratio to assign each of said available securities a separate price to cashflow rank, and determining for each of said available securities an average rank comprising the average of the one or more separate price appreciation ranks, separate return on assets ratio rank and separate price to cashflow ratio rank for said security; and

- selecting at least some of the ranked securities to form a group of selected securities; wherein at least one of the steps of calculating, ranking, and selecting is carried out by a computer.

Examiner notes that the limitation of "selecting at least some of the ranked securities to form a group of selected securities" as claimed by **Carey** is analogous to Applicant's *removing the dominated solutions from the portfolio performance space so as to result in a reduced set of solutions.*

Therefore, it would have been obvious to one having ordinary skill in the art at the time of instant invention to use **Josephson's** invention along with *generating a portfolio of top performing stocks* as taught by **Carey** because such portfolios may give investors comfort in knowing what they own [**Carey** column 4 lines 24-25], may allow diversification across many securities [**Carey** column 4 lines 27-30], and provide investors low expenses [**Carey** column 4 lines 31-34].

Regarding **claim 19** specifically, **Josephson** teaches use of a computer in his strategy as discussed above. However, he does not explicitly disclose a non-transitory computer-readable medium storing a computer program to perform method steps of this claim.

However, **Carey** claims a computer-readable medium bearing a computer program containing instruction steps installed in a general purpose computer (claim 20). Such computer readable medium is indicative of Applicant's *non-transitory computer-readable medium storing a computer program to execute method steps of this claim.*

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the instant invention to modify **Josephson's** invention to use *a general*

purpose computer as taught by **Carey** because it is an automated tool for performing such analysis.

Regarding **claim 2 and 12**, **Josephson** teaches:

- the step of repeating steps (c) - (g) for at least a second dimension of the portfolio performance space after the dominated solutions are removed from the portfolio performance space [see at least column 5 line 61 – column 6 line 9, and claim 11].

Regarding **claims 6 and 22**, **Josephson** teaches:

- the plurality of dimensions is n dimensions, and the bins are in the form of n-1 dimensional polyhedra in the portfolio performance space.

Josephson teaches finding more trade-offs using secondary criteria [see at least column 6 lines 58 -67, column 23 lines 35 – 46, and Figures 14 and 15]. Examiner interprets secondary criteria as analogous to Applicant's n dimensions and polyhedra as space represented in Figure 14 and 15.

Claims 7 and 23 are not further limiting to the claims upon which they depend.

Regarding **claim 11**, **Carey** teaches:

- the investment decisions are based on competing objectives that include risk and return.

Carey discloses that Portfolios are designed to fill a variety of investment needs and risk tolerance levels [column 1 lines 24-25]. Examiner interprets *needs and risk tolerance* as inclusive of Applicant's risk and return.

Thus, this claim is rejected for the same reason as claim 1, the claim upon which it depends.

Regarding **claim 13, Josephson** teaches:

- a coarseness of the bins is decreased as remaining dimensions of the portfolio performance space are selected.

Josephson discloses using dominance filtering to dominate candidates resulting with Pareto optimal candidates [column 4 lines 30-45]. Examiner interprets *Pareto optimal* as indicative of Applicant's **decreasing coarseness of bins**.

Regarding **claim 16, Josephson** teaches:

- the step of performing the final dominance check on the reduced set of solutions includes generating an efficient frontier.

Josephson discloses filtering using a threshold [see at least column 4 lines 45-50, and column 22 lines 31-61]. Examiner interprets **Josephson's** *threshold* as analogous to Applicant's **efficient frontier**.

Regarding **claim 17, Josephson** teaches:

- step of generating the first set of solutions of portfolio allocations includes using an evolutionary algorithm.

Josephson discloses using *domain-specific techniques and algorithms* [see at least column 4 lines 22-29, and **Josephson**'s claim 16]. Examiner interprets these algorithms to include Applicant's **evolutionary algorithm**.

Regarding **claim 18**, **Josephson** teaches:

- the step of comparing the solution with the maximum value in each bin to other solutions in each bin includes using Pareto dominance that includes uncertainties in measuring competing objectives [see at least column 1 line 55 – column 2 line 7].

Claim 20 is not further limiting to the claim 19, the claim upon which it depends.

Regarding **claim 24**, **Josephson** teaches:

- the dominance filtering portion performs a final dominance check on the final reduced set of solutions

This claim is similar and not further limiting than claim 16 and is thus rejected for the same reasons as claim 16.

(10) Response to Argument

1. Appellant states that the ***alleged*** (Examiner's emphasis added) novel aspects of a *fast dominance filter* can be found in citations in the Appellants' specification and Figures [Appeal Brief, page 16]. He does *not* make any argument that **Josephson** and **Carey** references do not teach the claimed invention [Id.]. Appellant *does* state that **Josephson** teaches "classical" dominance filter in contrast to *a fast dominance filter* of the claimed invention [Id.]. However, Examiner respectfully disagrees on Appellants' statement regarding *a fast dominance filter*.

Appellant does not claim *fast dominance filter* (emphasis on "fast") *per se*. Accordingly, this argument is ***not*** directed toward the claim language. Examiner notes that the claims should be read in light of the specification which is different than "reading

limitations of the specification into a claim" which would thereby narrow the scope of the claim by *implicitly* adding disclosed limitations which have no express basis in the claim (see MPEP 2111 Claim Interpretation).

2. The Appellant provides a review of case law regarding obviousness [Appeal Brief, page 17 to top of page 20]. Examiner does not see any arguments in this text.

3. Appellant argues **Josephson** does not teach or suggest *the particular mechanics of a dominance filter* [Appeal Brief page 20, 1st full paragraph]. However, Examiner respectfully disagrees.

Josephson uses a strategy of **dominance filtering** as applied to hybrid electric vehicle design (HEV), a domain in which the architecture of his invention has been tested [column 4 lines 51-67]. Design candidates are screened using four criteria [column 1 lines 54-60]. In particular, he uses trade-offs between city and highway efficiencies in miles per gallon [column 5 lines 18-33], and acceleration capacity [column 5 lines 34-48]. Examiner interprets *screening design candidates for different criteria* as indicative of Appellants' **set of solutions**. **Josephson** uses a computing device in his strategy [see at least column 2 lines 41-52, column 7 lines 29-39].

Josephson discloses a user **discarding** candidates which have worse performance than say acceleration of vehicle to 60 MPH in more than 12 seconds [see at least column 5 line 49 - column 6 line 9, and column 6 line 47- 53]. Examiner interprets this selection of "candidates for discarding" as analogous to Appellants' **removing the dominated solutions**.

Josephson applies his disclosure to choosing **an investment portfolio**. He discloses:

> The architecture of the present invention may be applied to a problem that is often used in the academic literature to validate multicriterial optimization

> proposals--choosing an investment portfolio. In a portfolio choice experiment, 51 portfolios, evaluated along four criteria--capitalization-value, mean-historic-monthly return, variance-of-return and price-earnings-ratio--were filtered using dominance, and 15 survived [column 28 lines 43-50].

Similarly, the *portfolios evaluated along the four criteria* are analogous to the Appellants' **set of solutions** wherein the *survived portfolios* are indicative of Appellants' **removing dominated solutions**.

Further, **Josephson** discloses "Types of decision activities that a user performs using the Viewer include: 1) discarding bad alternatives in some scatterplot; 2) selecting good alternatives in some scatterplot; and 3) looking for regions in a scatterplot where, for a relatively small decrease in performance in one dimension, a disproportionately large increase is available in the other dimension" [column 6 lines 47-51]. Examiner maintains that *the types of decision activities* as disclosed by **Josephson** are indicative of the **mechanics of a dominance filter**.

4. Appellant argues that there is no mention in **Josephson** of the mechanics of a fast dominance filter recited in at least steps (d)-(f) of Claim 1 [Appeal Brief page 20, 1st full paragraph]. However, Examiner respectfully disagrees.

First, Examiner restates that Appellant does not claim *fast dominance filter* (emphasis on "fast") *per se,* and that this argument is ***not*** directed toward the claim language.

Second, Examiner asserts that **Josephson** does ***not*** explicitly disclose steps (d)-(f) of Claim 1 in that these steps are attributed to **Carey.**

5. Appellant states, but does not argue, that Office action does not comply with *37 CFR 1.104(c)(2)* [Appeal Brief page 20, 2nd full paragraph]. However, Examiner respectfully disagrees.

37 CFR 1.104(c)(2) states:

> In rejecting claims for want of novelty or for obviousness, the examiner must cite the best references at his or her command. When a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part relied on must be designated as nearly as practicable. The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified.

Examiner maintains that the pertinence of each reference is clearly explained and each rejected claim specified. This is further articulated below.

6. Appellant further cites *MPEP 707,* which states [Appeal Brief page 20, 2nd and 3rd full paragraph]:

> "When considered necessary for adequate information, the particular figures(s) of the drawings(s), and/or pages(s) or paragraph(s) of the references(s), and/or any relevant comments briefly stated should be included. For rejections under 35 U.S.C. 103, the way in which a reference is modified or plural references are combined should be set out."

Examiner maintains that the particular figures(s) of the drawings(s), and/or pages(s) or paragraph(s) of the references(s), and/or any relevant comments briefly stated *are* included, and that the way in which a reference is modified or plural references are combined *is* set out. This is further articulated below.

7. Appellant argues **Josephson** does not teach *steps (c)-(g) of the claimed invention* [Appeal Brief page 20, 4th paragraph]. However, Examiner respectfully disagrees in that steps (c)-(g) are attributed to **Carey.**

8. Appellant argues **Carey** is directed to a method for selecting securities for a portfolio and adds nothing to overcome these shortcomings in **Josephson** [Appeal Brief page 20, 5th paragraph]. However, Examiner respectfully disagrees.

Carey teaches:

- c) selecting a first dimension from the at least three dimensions of the portfolio performance space;
- d) generating bins for all remaining non-selected dimensions of the portfolio performance space
- e) determining a solution in each bin of the non-selected dimensions with maximum value along the selected dimension;
- (f) comparing the solution with the maximum value in each bin to other solutions in each bin to determine whether other solutions are dominant solutions or dominated solutions; and
- g) removing the dominated solutions from the portfolio performance space so as to generate a reduced set of solutions, the reduced set of solutions being used in investment decisions.

Carey teaches a strategy of defining an universe of securities for potential investment [column 1 lines 54-60] and uses statistical analysis to evaluate the price history of each [column 2 lines 4-18]. Stocks are sorted and stored according to magnitude of a stocks *one-year price appreciation* [column 2 line 55-63], magnitude of the company's *return-on-assets* [column 3 lines 17- 30], and *price-to-cashflow ratio* [column 3 lines 30-44]. Examiner maintains that *these parameters by which the stocks are sorted* are analogous to Appellants' *at least three dimensions of the portfolio performance space* [Appellants' claim 1 **limitation (c)**]. Examiner also maintains that *using these parameters to sort stocks* includes Appellants' *selecting a first dimension* [Appellants' claim 1 **limitation (c)**].

He further discloses sorting all stocks in descending order of *one-year price appreciation* and writing to File A, descending order of *six-month price appreciation* and

writing to File B, descending order of *return-on-assets ratio* and writing to File C, and **ascending** order of *price-to-cash flow ratio* and writing to File D [Figure 1]. Examiner maintains that these *Files A, B, C, and D* as analogous to Appellants' *bins of the portfolio performance space* [Appellants' claim 1 **limitation (d)**] whereas the parameters *one-year price appreciation, six-month price appreciation, return-on-assets ratio*, and *price-to-cash flow ratio* as analogous to Appellants' *dimensions*. Examiner maintains that *maximum values* - extreme values - are inherent when sorting stocks in ascending or descending orders of magnitude [Appellants' **limitation (e)**].

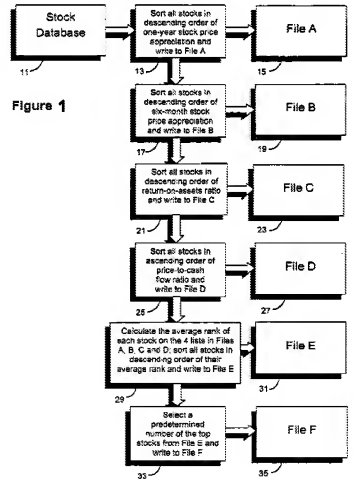

Figure 1 (Carey)

Carey then sorts and organizes stocks according to the magnitude of each company's average ranking in each of these categories. He discloses:

> After File D has been completed, the step indicated by diagram block 29 is performed in which the *stocks are sorted, or organized, according to the magnitude of the company's average rank* on the four lists in Files A, B, C, and D. (For example, a stock that happened to be ranked first in Files A and B, i.e., happened to have the greatest one-year and six-month PAVs, and was ranked second in Files C and D, i.e., had the second highest return-on-assets ratio and the second lowest price-to-cashflow ratio, would have an average rank of (1+1+2+2)/4 or 1.5.) The sorting may be done by organizing the stocks in descending order of their average rank. (A stock with an average rank of 1.5 would be listed ahead of a stock with an average rank of 2.0, etc.) The sorted stock names are written to File E, as shown in diagram block 31 [column 3 lines 45-59].

Examiner maintains that *sorted stocks which are written to File E* as analogous to Appellants' *set of solutions*, and that, herein, **Carey's** *sorting and organizing stocks according to the magnitude of the company's average rank* is indicative of Appellants' *comparing ranks of stocks among files A, B, C, and D* [Appellants' claim 1 **limitations (e) and (f)**].

Carey further discloses in his claim 1:

> A computer-implemented method for selecting securities from a group of available securities for an investment portfolio, comprising:
>
> - said computer performing the steps of calculating price appreciation for each of said available securities;
> - calculating a return on assets ratio for each of said available securities;
> - calculating a price to cashflow ratio for each of said available securities;
> - ranking at least some of the available securities to form a group of ranked securities, said ranking comprising ranking according to said price appreciation to assign each of said available securities one or more separate price appreciation

ranks, ranking according to said return on assets ratio to assign each of said available securities a separate return on assets ratio rank, ranking according to said price to cashflow ratio to assign each of said available securities a separate price to cashflow rank, and determining for each of said available securities an average rank comprising the average of the one or more separate price appreciation ranks, separate return on assets ratio rank and separate price to cashflow ratio rank for said security; and

- selecting at least some of the ranked securities to form a group of selected securities; wherein at least one of the steps of calculating, ranking, and selecting is carried out by a computer.

Examiner maintains that the limitation of "selecting at least some of the ranked securities to form a group of selected securities" as claimed herein by **Carey** is analogous to Appellants' *removing the dominated solutions from the portfolio performance space so as to generate a reduced set of solutions* [Appellants' claim 1 **limitation (g)**].

Further, **Josephson** discloses "Types of decision activities that a user performs using the Viewer include: 1) discarding bad alternatives in some scatterplot; 2) selecting good alternatives in some scatterplot; and 3) looking for regions in a scatterplot where, for a relatively small decrease in performance in one dimension, a disproportionately large increase is available in the other dimension" [column 6 lines 47-51]. Examiner maintains that *discarding bad alternatives* is further indicative of Appellants' *removing the dominated solutions from the portfolio performance space* [Appellants' claim 1 **limitation (g)**].

9. Appellant argues that there is no mention in the applied art (i.e. **Josephson** and **Carey**) of at least the feature of a dominance filtering portion that:

- selects a first dimension from the at least three dimensions of the portfolio performance space,

- generates bins for all remaining non-selected dimensions of the portfolio performance space,
- determines a solution in each bin of the non-selected dimensions with a maximum value along the selected dimension,
- compares the solution with the maximum value in each bin to other solutions in each bin to determine whether the other solutions are dominant solutions or dominated solutions, and
- removes the dominated solutions from the portfolio performance space so as to result in a reduced set of solutions,

as recited in independent Claim 19 [Appeal Brief bottom of page 20 – top of page 21]. However, Examiner respectfully disagrees in that claim 19 is a computer-readable medium with limitations parallel to those of claim 1. Accordingly these limitations are taught by **Josephson** and **Carey** as discussed above.

10. Appellant only argues the allowability of claims 20 and 22-24 as being dependent on claim 19 [Appeal Brief page 21]. Accordingly, Examiner maintains rejections.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Ed Baird/
Examiner, Art Unit 3695

Conferees:

/Charles R. Kyle/

Supervisory Patent Examiner, Art Unit 3695

VincentMillin/vm/

Appeals Practice Specialist